OCS-A 0501 MASS USA

VINEYARD WIND

Draft Construction and Operations Plan

Volume III Appendices

Vineyard Wind Project

October 22, 2018

Submitted by
Vineyard Wind LLC
700 Pleasant Street, Suite 510
New Bedford, Massachusetts 02740

Submitted to
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Prepared by
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754

Epsilon ASSOCIATES INC.

Draft Construction and Operations Plan

Volume III

Appendices

Vineyard Wind Project

Submitted to:

BUREAU OF OCEAN ENERGY MANAGEMENT
45600 Woodland Rd
Sterling, VA 20166

Submitted by:

VINEYARD WIND LLC
700 Pleasant Street, Suite 510
New Bedford, MA 02740

Prepared by:

EPSILON ASSOCIATES, INC.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

In Association with:

Biodiversity Research Institute
C2Wind
Capitol Air Space Group
Clarendon Hill Consulting
Ecology and Environment
Foley Hoag
Geo SubSea LLC
Gray & Pape
JASCO Applied Sciences
Morgan, Lewis & Bockius LLP
Public Archaeology Laboratory, Inc.
RPS
Saratoga Associates
Swanson Environmental Associates
Wood Thilsted Partners Ltd
WSP

October 22, 2018

Appendix III-R

Proposed Mitigation to Facilitate East-West Fishing in the Wind Development Area

PROPOSED MITIGATION TO FACILITATE EAST-WEST FISHING IN THE WIND DEVELOPMENT AREA

In an effort to accommodate Rhode Island commercial fishermen's stated preference for fishing in an east-west direction within the Wind Development Area (WDA), Vineyard Wind spent many months examining the feasibility of alternate Wind Turbine Generator (WTG) layouts that could accommodate east-west vessel traffic by creating one nautical mile (nm) wide fishing lanes within the WDA without impacting the construction schedule and putting the project at risk. To that end, Vineyard Wind evaluated the feasibility of relocating a number of WTGs to alternate locations where geophysical data was adequate for design and regulatory review purposes. As a result of this analysis, it was determined that, at most, two one nm mile wide lanes could be created within the WDA. It is also possible that a third, 0.5 nm lane could be established under this alternate layout.[1] Vineyard Wind presented this mitigation option to representatives of the Rhode Island fishing industry, but were told the alternate layout did not meaningfully address their concerns.

Vineyard Wind therefore looked for ways to reduce the total area of the WDA not aligned in an east-west orientation, through the elimination of certain WTG positions. Because Vineyard Wind is committed to orienting the remainder of its Lease Area, south of the WDA, in an east-west direction, Vineyard Wind this focused on the southerly portion of the WDA adjacent to where future turbines may be placed. As shown in Figure R-1, twelve WTG locations (shown in red) were eliminated, thereby creating three, one nm wide east-west lanes and reducing the portion of the WDA not aligned in an east-west direction. A portion of a fourth, one nm wide east-west lane is also created. This alternate layout also allows a consistent alignment with future turbines sited in the remaining Lease Area, as shown in blue on Figure R-1. The future WTG locations shown in blue are for illustrative purposes only; those locations represent the general arrangement of WTGs and are not necessarily the locations where WTGs will be sited at some future date.

This alternate layout reduces the size of the WDA where turbines are not oriented in east-west rows is reduced by approximately 19%, or 57 sq. km (16.6 sq. nm). As noted above, Vineyard Wind will align future turbines to the south of the WDA in an east-west direction. Therefore, the only portion of the Lease Area with WTGs not oriented in an east-west direction will be limited to the northerly portion of the WDA. Upon full buildout of the lease area, 63% of the entire Lease Area will be aligned in an east-west direction with one nm spacing between turbine rows. Placement of WTGs to the south of the WDA at some future date will also incorporate a 2 nm wide Vessel Transit Corridor described in BOEM's Atlantic

---

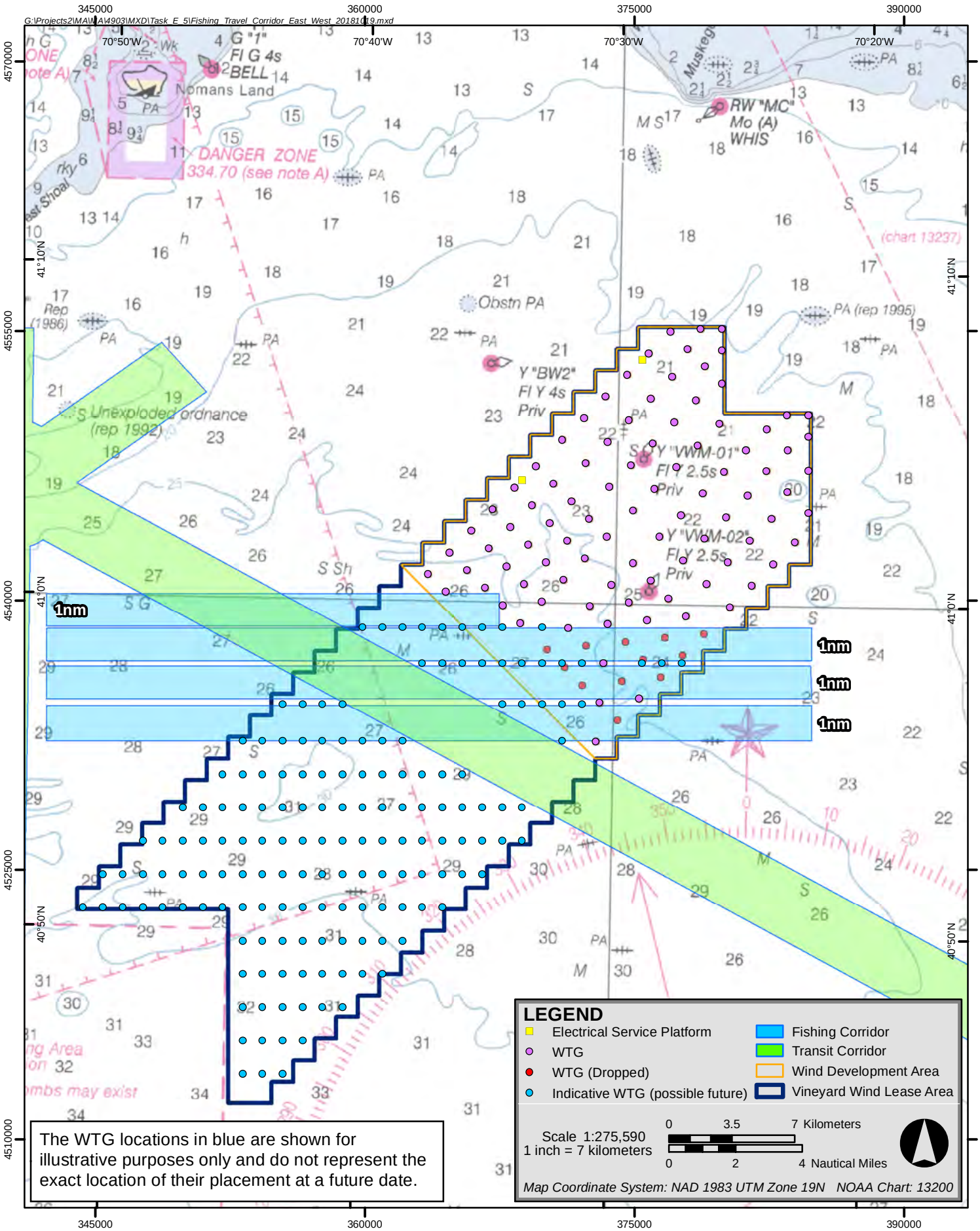
[1] In consultation with BOEM, Vineyard Wind concluded that moving even a limited number of WTG locations at this stage of the regulatory review process would introduce considerable schedule risk and therefore should not be considered unless there was a clear and significant advantage to the alternate layout.

Wind Sale 4A - Supplemental Information for Bidders, dated October 17, 2018. This 2 nm wide transit lane was developed through discussion among fishing stakeholders and state agencies and presented during the September 20th, 2018 Massachusetts Fisheries Working Group (FWG) on Offshore Wind meeting. This transit lane layout represents a compromise of the various desired transit directions and corridor widths to/from priority areas identified by various fishing sectors and ports. Scallopers, fixed gear, squid, and whiting/scup fishermen from MA, NY, and RI ports all agreed this was a workable compromise at the meeting. MA Coastal Zone Management and the US Coast Guard have also expressed support of these transit lanes.

Although establishing the three full east-west lanes described above is technically feasible and a reasonable alternative to accommodate fishermen's desire for east-west orientation with 1 nm between WTGs, the alternate layout creates some risk for Vineyard Wind because it eliminates spare locations incorporated into the design should other issues arise, such as heretofore unknown geological challenges.

While Vineyard Wind is committed to working with fisheries stakeholders, a vessel track graphic provided by the Commercial Fisheries Center of Rhode Island (CFCRI) suggests that over a 20-year period, fishing vessel tows in an east-west direction occur predominantly in areas to the south and west of the WDA. Figure R-2 overlays the alternate layout on the CFCRI vessel track graphic, demonstrating that the east-west vessel track lines are predominantly within the lanes Vineyard Wind proposes to create in both the WDA and the remaining portion of the Lease Area to the south of the WDA.

That said, based on CFCRI track graphic, it is apparent that commercial fishing occurs in more unpredictable patterns in the northerly portion of the WDA where the turbines not aligned east-west will be located (Figure R-2). Indeed, vessel tracks in this area appear largely in a northwest-southeast direction, consistent with the proposed layout in that area. Nonetheless, Figure R-2 demonstrates that the modified WDA is a reasonable alternative by Vineyard Wind to accommodate the requests of Rhode Island fishermen.

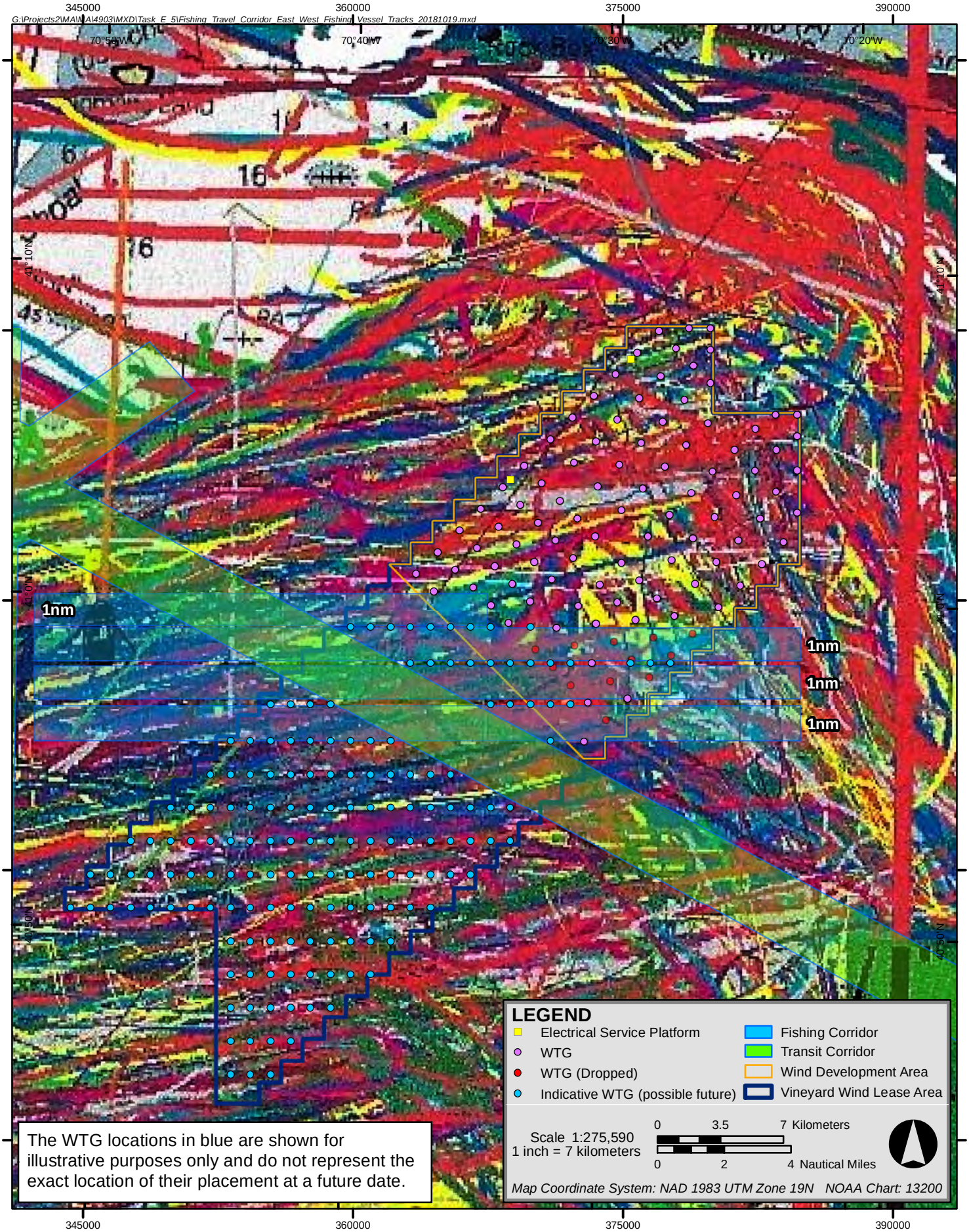


Vineyard Wind Project

VINEYARD WIND

Figure R-1

Alternate Layout



Vineyard Wind Project

VINEYARD WIND

Figure R-2

Fishing Vessel Tracks